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SILICON CARBIDE GATE TRANSISTOR AND FABRICATION PROCESS

Abstract of the Disclosure

A field-effect transistor (FET) device and method of fabrication uses an

5 electrically interconnected polycrystalline or microcrystalline silicon carbide (SiC) gate having a lower electron affinity and higher work function than a polysilicon gate FET. The smaller threshold voltage magnitude of the SiC gate FET allows reduced power supply voltages (lowering power consumption and facilitating downward scaling of transistor dimensions), and enables higher switching speeds and improved performance.

10 The smaller threshold voltage magnitudes are obtained without ion-implantation, which is particularly useful for SOI and thin film transistor devices. Threshold voltage magnitudes are stable in spite of subsequent thermal processing steps. N-channel threshold voltages are optimized for enhancement mode.

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